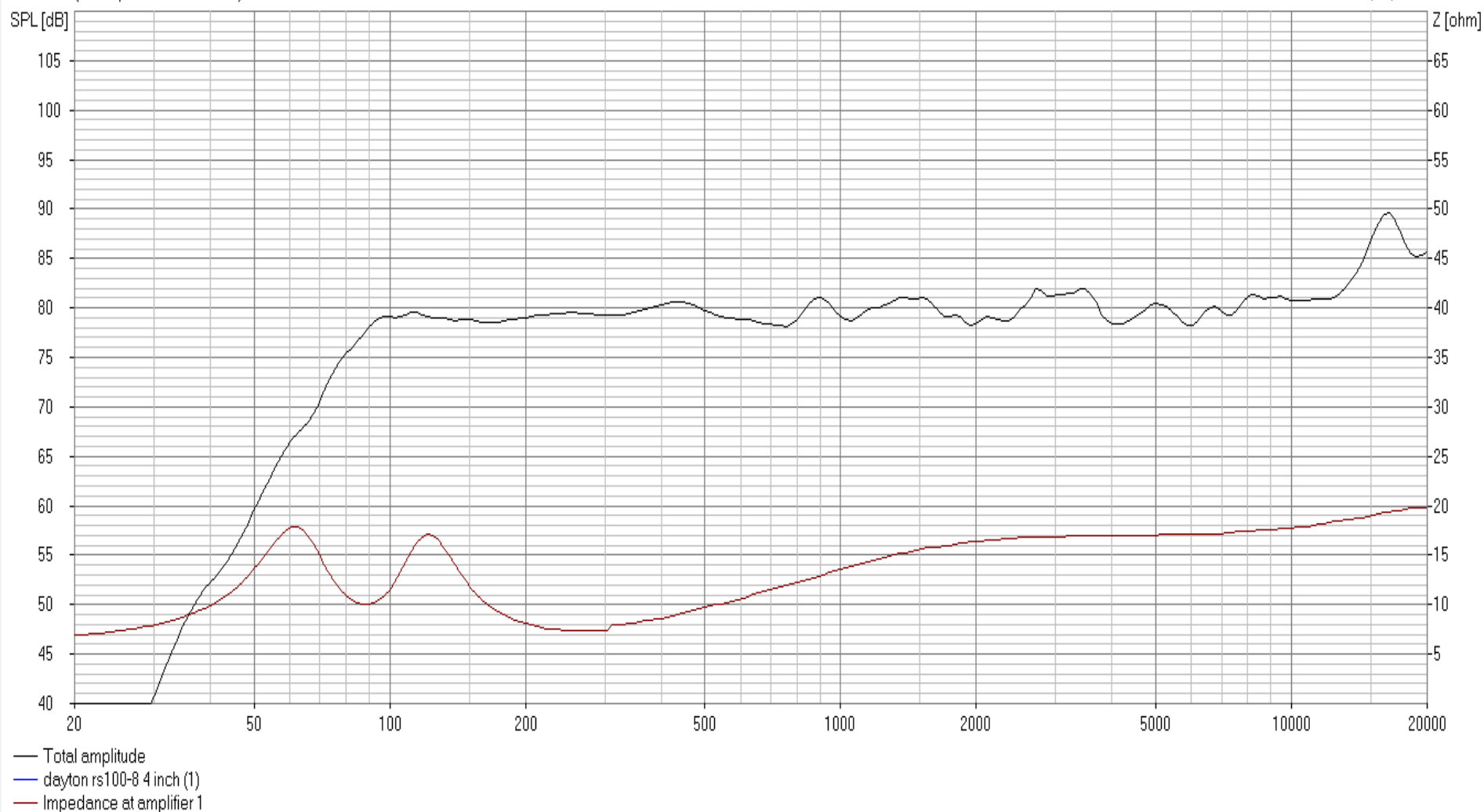


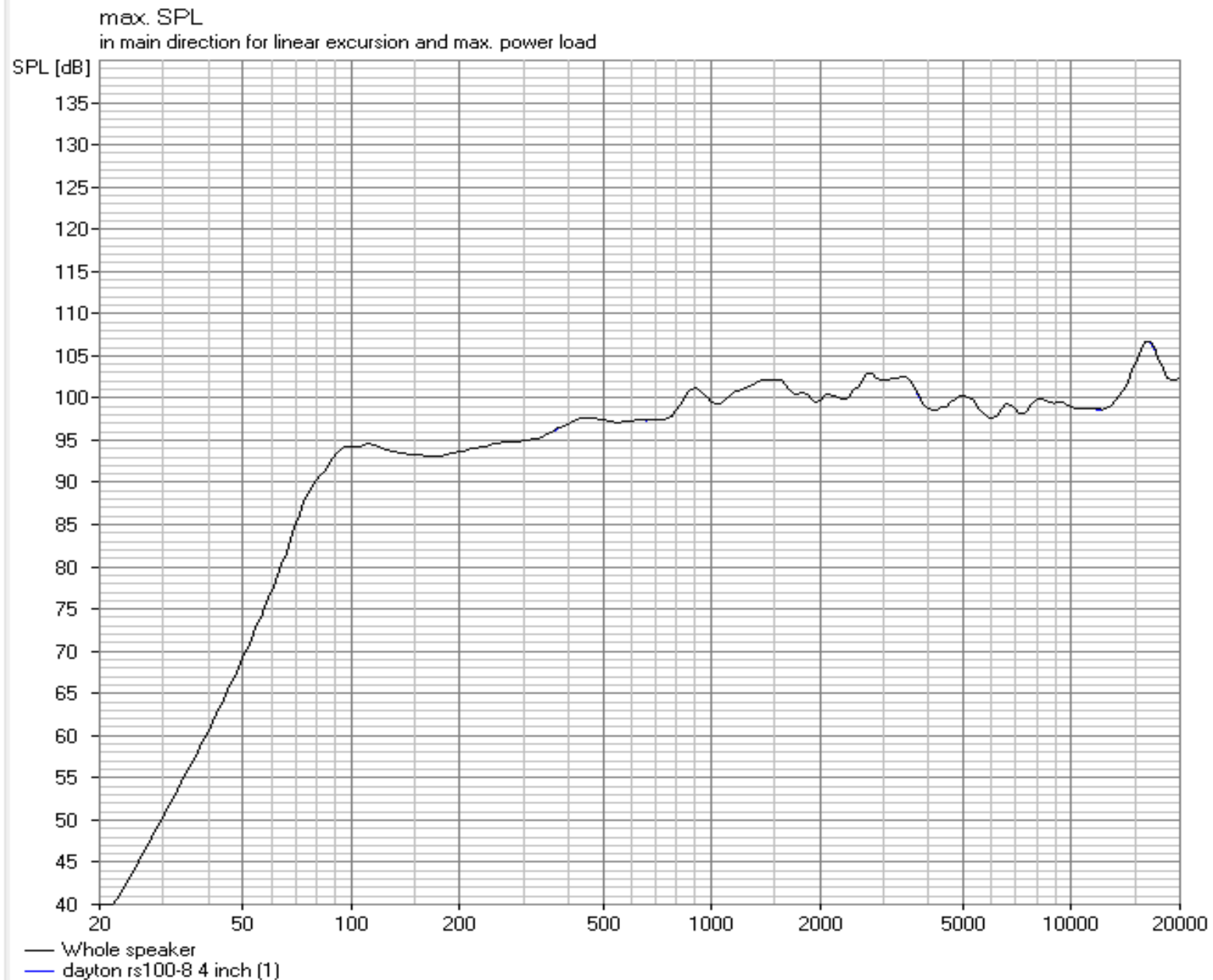
Full range speaker design for HT/Computer use with Dayton RS100-8 4inch driver

<http://www.daytonaudio.com/index.php/rs100-8-4-reference-full-range-driver.html>

Frequency response whole speaker
(all amplifiers and drivers)

18/09/2014





Crossover to sub will be needed at 100Hz . Till 100Hz, a max SPL of 95 can be achieved which I feel, would be plenty for a medium size room (15' x15')



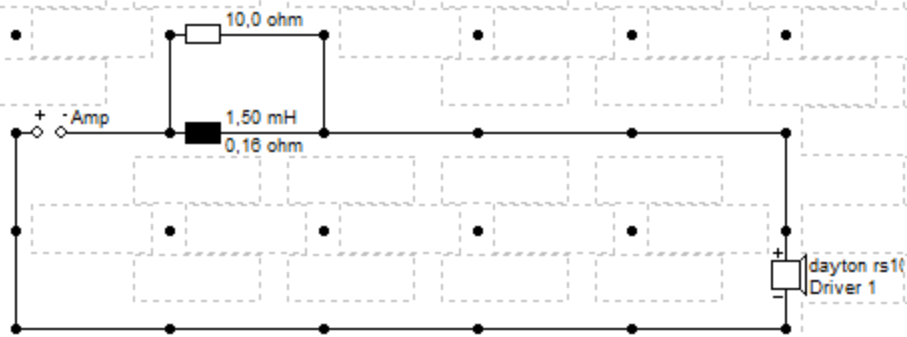
Crossover network editor - amplifier 1

action size of window display of inductances View free wires Mouse key settings Optimization

Ok

Apply

Abort



50

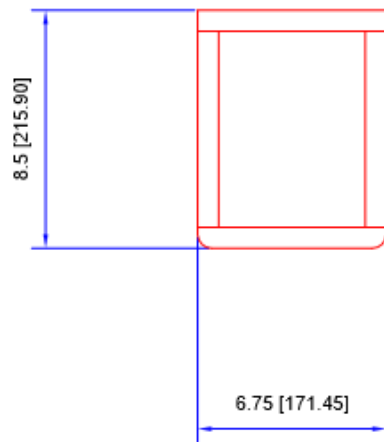
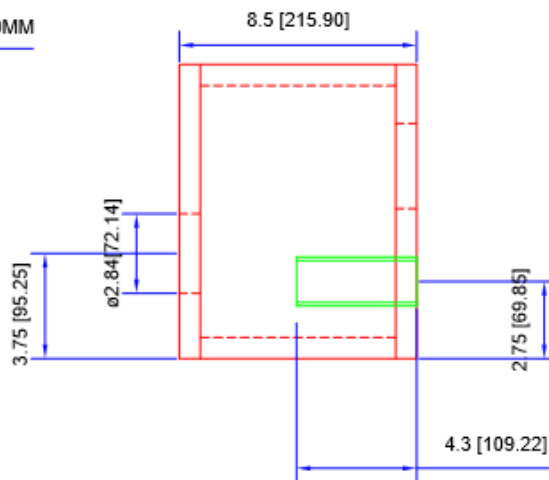
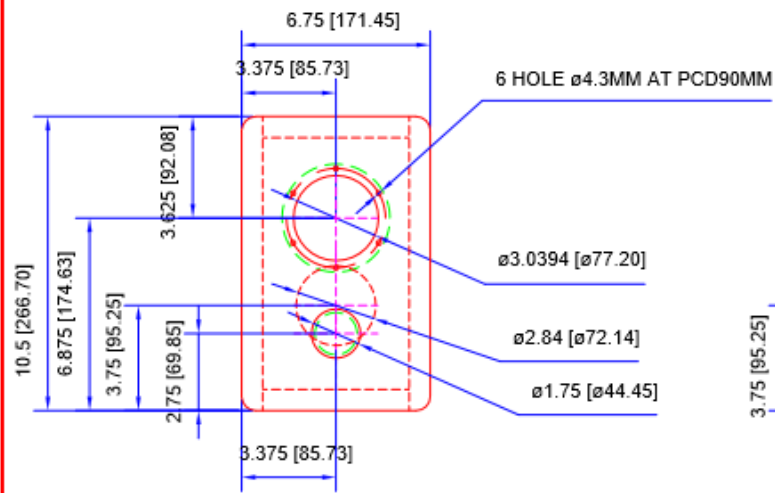
100

200

500

1000

2000



1. No. of Drivers and Ports: 1 each
2. Driver: Dayton Audio 4" Full Range Driver, RS 100-8
3. Box Tune Frequency: $F_b: 70.0\text{Hz}$
4. Box F_3 : 60.81Hz
5. Gross Box Volume = 5.4 ltrs
5. Net Box Volume used for unibox simulations (subtracting internal bracing, driver volume, port volume and batten volume)- 5.0 ltr.
6. Unibox Calculations are tuned to 5.0 ltr, with port dia of 3.81 cm and 10.95cm length
- 6.1. For bracing and batten dimensions, pl refer vol.calc.m Surround speakers xls file
7. Driver is not flush mounted
8. Box material is MDF- 0.75inch thick

Main Units are in Inches, Units in brackets are in mm

With a recent update of specs and FR from Dayton for this driver, I have not updated my calculations. May b a 3 ltr box is sufficient and tune the box to 85 Hz to get a optimally flat response.

Remarks

- Pl do share your comments on the design
- My basic purpose is use this speaker in a 5.1 set up (to be used for front /surround/center) like the zaph's design with B3S (<http://www.zaphaudio.com/audio-speaker18.html>).
- Below 100 Hz frequencies would be taken care with an active sub connected to LFE channel.
- I am still not too convinced about the off-axis response of the 4inch speaker. Simulation shows response above 10-12KHz drops significantly at 30 deg listening angle.
- To counter this, the only solution I assume, is to place the speaker exactly at ear level and toe-in towards the listener. As such this system is probably suitable to small home theater with 2-3 listeners max.
- Also I have left the peak at 16kHz untouched to that It can improve off-axis output.